BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Boxford

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

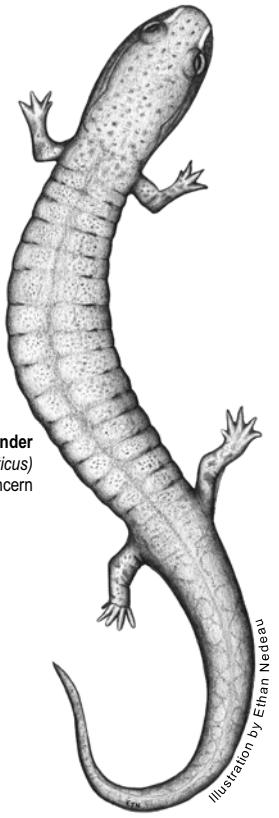
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

Table of Contents

* Depending on the location of Core Habitats, your city or town may not have all of these sections.



Spring Salamander
(Gyrinophilus porphyriticus)
Species of Special Concern

Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

For more information on rare species and natural communities, please see our fact sheets online at ***www.nhesp.org***

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

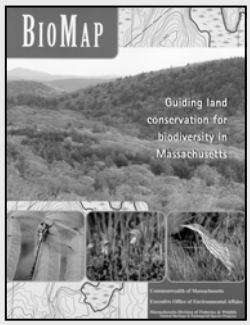
Introduction

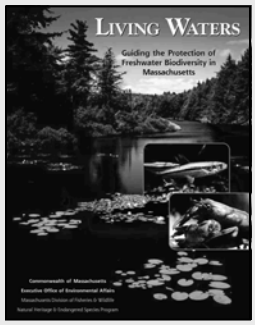
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, ***BioMap*** and ***Living Waters***. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate ***Core Habitats*** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the ***BioMap*** and ***Living Waters*** reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the ***riparian areas***, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as ***Supporting Natural Landscape*** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, ***Critical Supporting Watersheds*** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap

	Species and Verified Natural Community Types	
Biodiversity Group	**Included in BioMap**	**Total Statewide**
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types

Living Waters

	Species	
Biodiversity Group	**Included in Living Waters**	**Total Statewide**
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- ***Endangered*** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- ***Threatened*** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- ***Special Concern*** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial ***watch list*** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- ***Critically Imperiled*** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- ***Imperiled*** communities typically have 6-20 sites or few remaining acres in the state.
- ***Vulnerable*** communities typically have 21-100 sites or limited acreage across the state.
- ***Secure*** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The ***Massachusetts Natural Heritage Atlas*** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific ***fact sheets*** at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone *508-792-7270, Ext. 200*

by Fax: *508-792-7821*

by Email: *natural.heritage@state.ma.us*.

by Mail: *North Drive*
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - Natural Heritage Atlas, and more!

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

BioMap: Species and Natural Communities

Boxford

Core Habitat BM11

Natural Communities

Common Name	Scientific Name	Status
Estuarine Intertidal: Brackish Tidal Marsh		Critically Imperiled

Plants

Common Name	Scientific Name	Status
Long's Bulrush	*Scirpus longii*	Threatened

Vertebrates

Common Name	Scientific Name	Status
American Bittern	*Botaurus lentiginosus*	Endangered
Blanding's Turtle	*Emydoidea blandingii*	Threatened
Blue-spotted Salamander	*Ambystoma laterale*	Special Concern
Four-toed Salamander	*Hemidactylium scutatum*	Special Concern
Least Bittern	*Ixobrychus exilis*	Endangered
Spotted Turtle	*Clemmys guttata*	Special Concern
Wood Turtle	*Clemmys insculpta*	Special Concern

Core Habitat BM117

Plants

Common Name	Scientific Name	Status
River Bulrush	*Bolboschoenus fluviatilis*	Special Concern

Invertebrates

Common Name	Scientific Name	Status
Coppery Emerald	*Somatochlora georgiana*	Endangered
Sensitive Rare Invertebrate		

BioMap: Species and Natural Communities

Boxford

Vertebrates

Common Name	Scientific Name	Status
Blanding's Turtle	*Emydoidea blandingii*	Threatened
Blue-spotted Salamander	*Ambystoma laterale*	Special Concern
Eastern Box Turtle	*Terrapene carolina*	Special Concern
Four-toed Salamander	*Hemidactylium scutatum*	Special Concern
Grassland Bird Habitat		----------
Spotted Turtle	*Clemmys guttata*	Special Concern

Core Habitat BM133

Natural Communities

Common Name	Scientific Name	Status
Shrub Swamp		Secure

Plants

Common Name	Scientific Name	Status
Small Bur-Reed	*Sparganium natans*	Endangered

Core Habitat BM153

Natural Communities

Common Name	Scientific Name	Status
Circumneutral Talus Forest/Woodland		Vulnerable
Level Bog		Vulnerable
Oak - Hickory Forest		Secure

Invertebrates

Common Name	Scientific Name	Status
Hessel's Hairstreak	*Callophrys hesseli*	Special Concern
Kennedy's Emerald	*Somatochlora kennedyi*	Endangered
Mocha Emerald	*Somatochlora linearis*	Special Concern
Sensitive Rare Invertebrate		

Vertebrates

Common Name	Scientific Name	Status
Blanding's Turtle	*Emydoidea blandingii*	Threatened
Blue-spotted Salamander	*Ambystoma laterale*	Special Concern
Eastern Box Turtle	*Terrapene carolina*	Special Concern
Spotted Turtle	*Clemmys guttata*	Special Concern

Core Habitat BM183

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM205

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

Core Habitat BM393

Natural Communities

Common Name	Scientific Name	Status
Small-River Floodplain Forest		Imperiled

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

BioMap: Core Habitat Summaries

Boxford

Core Habitat BM11

This large Core Habitat encompasses much of the upper Parker River and surrounding wetlands, as well as the Crane Pond and Martin Burns Wildlife Management Areas. It provides diverse habitats for wetland, forest, and shrubland birds, and, if protected, could conserve significant populations of five rare species of turtles and salamanders. The marshes in the Core Habitat also support a large population of the globally rare Long's Bulrush.

Natural Communities

In Newbury, this Core Habitat contains a small part of the most pristine Brackish Tidal Marsh in the state. Although there are a few signs of disturbances including invasive species and past ditching, this marsh is well-buffered by 800 acres of naturally forested land. The Brackish Tidal Marsh community is often found in the brackish stretches of coastal rivers, and consists of mixed herbaceous vegetation that is flooded by daily tides. The community is structurally diverse, including high marsh and low marsh.

Plants

A large population of the globally rare Long's Bulrush grows within the marshes in this Core Habitat.

Vertebrates

This Core Habitat contains several documented observations of state-protected rare amphibians and reptiles. It is an area where long-term preservation of significant populations of Blanding's, Wood, and Spotted Turtles, as well as Blue-spotted and Four-toed Salamanders may be possible. It is characterized by a good interspersion of vernal pools, other wetlands, and undeveloped uplands, and generally has good riparian connectivity.

Small areas of the Core Habitat contain freshwater marsh that provide habitat for American Bitterns and Least Bitterns. Over time, local wetlands created or modified by beavers may provide additional habitat for American Bitterns and other wetland birds. This Core Habitat also contains important breeding habitat for many species of forest and shrubland birds characteristic of the northeastern Massachusetts Coastal Plain.

Core Habitat BM117

This large Core Habitat, anchored by the Willowdale State Forest, contains a mix of wetland and upland habitats that provide some of the best areas in the state for protecting viable populations of Blue-spotted Salamanders and other rare reptiles and amphibians. The area supports a robust population of the rare River Bulrush, contains key wetland habitat for rare dragonflies, and encompasses breeding and migration habitats for many types of birds. Further conservation of unprotected lands would decrease habitat fragmentation and help ensure the long-term viability of rare species in this Core Habitat.

Plants

A large, robust population of the rare River Bulrush is found within the marshes along the Ipswich River.

Invertebrates

This Core Habitat includes a large complex of bogs, swamps, and other wetlands, in western Ipswich and northeastern Topsfield, that are important habitat for rare species of dragonflies. This habitat is in close enough proximity to Core Habitat immediately to the west (Boxford State Forest and vicinity) to allow dispersal of dragonflies between these two locations.

Vertebrates

This large Core Habitat has good interspersion of wetland, riparian, and upland habitats. It includes some of the best areas in the state for protecting viable populations of Blue-spotted Salamanders, and provides significant habitat for other rare reptiles and amphibians, especially Four-toed Salamanders and Spotted Turtles. This Core Habitat also contains large tracts of breeding and migration habitat for birds of upland forests, forested wetlands, and shrublands characteristic of the southern New England Coastal Plain. Hayfields and pastures at Appleton Farms support relatively large breeding populations of Eastern Meadowlarks and Bobolinks.

Core Habitat BM133

Natural Communities

This Core Habitat contains a wide, diverse, and vigorous lakeside Shrub Swamp, the fifth-largest such community identified in the state. Shrub Swamp communities are a common and variable type of wetland occurring on seasonally or temporarily flooded soils. They are often found in the transition zone between emergent marshes and swamp forests.

Plants

This area contains several populations of the Endangered Small Bur-Reed, an emergent or floating plant of shallow, alkaline waters.

Core Habitat BM153

This large Core Habitat is anchored by several large tracts of protected land, including the Harold Parker State Forest and the Boxford State Forest. It contains important and connected wetland and upland habitats for state-protected rare salamanders and turtles, including Blanding's Turtle. It represents a key site in eastern Massachusetts for protecting significant Blue-spotted Salamander populations. The Core Habitat also includes a good-sized example of an Oak-Hickory Forest community, and habitats for the rare Hessel's Hairstreak butterfly as well as rare dragonflies. Much of the area is conservation land, and further protection of undeveloped lands within the Core Habitat would help decrease habitat fragmentation by roads and development.

Natural Communities

This Core Habitat includes a good-sized, second-growth, Oak-Hickory Forest embedded within a large area of naturally vegetated land. Oak-Hickory Forests are dominated by a variety of Oak species, with Hickories present in lower densities. They generally occupy well-drained sites, such as upper slopes or ridgetops often with west and south-facing aspects.

Invertebrates

This Core Habitat includes Cedar Pond in North Andover and the surrounding Atlantic White Cedar Swamp, which are important habitat for Hessel's Hairstreak butterfly. Although adjacent to the Boxford State Forest, the Cedar Pond and the surrounding swamp is apparently unprotected. A large network of bogs, swamps, and other wetlands in the southeastern part of North Andover and the southwestern portion of Boxford are important habitat for rare dragonflies. This habitat is in close enough proximity to Core Habitat immediately to the east (Willowdale State Forest and vicinity) to allow dispersal of dragonflies between these two locations. Two rare dragonflies, Kennedy's Emerald and the Mocha Emerald, have been documented in this area in 1973, and may still persist here.

Vertebrates

This large Core Habitat encompasses a diverse mix of forested and shrub wetlands, small streams and associated riparian habitats, small ponds, and upland forest. The area contains what may be some of the most important habitat in eastern Massachusetts for protecting significant populations of Blue-spotted Salamanders. It also contains significant habitat for Blanding's, Spotted, and Eastern Box Turtles. The larger lobes of undeveloped land within this Core Habitat provide important habitat for breeding birds characteristic of upland forests and forested wetlands in eastern Massachusetts. Conservation priorities should include protecting Blanding's Turtle habitat, maintaining wetland connectivity, and expanding and connecting existing areas of conservation land.

Core Habitat BM393

Natural Communities

This Core Habitat contains one of the remaining eight good-quality Small-River Floodplain Forests in the state. Small-River Floodplain Forests are Silver Maple-Green Ash forests occurring on alluvial soils of small rivers and streams. They occur on small tributaries of the Connecticut and Nashua Rivers and along some small rivers of eastern Massachusetts. This floodplain forest contains both young and mature trees and is partially buffered by naturally vegetated lands. This natural community type is highly imperiled by the encroachment of invasive exotic species. Restoration efforts are necessary at all Small-River Floodplain Forest sites in Massachusetts to help ensure that this natural community type persists.

Living Waters: Species and Habitats

Boxford

Core Habitat LW111

Fishes

Common Name	Scientific Name	Status
Bridle Shiner	*Notropis bifrenatus*	Special Concern

Core Habitat LW129

Fishes

Common Name	Scientific Name	Status
Bridle Shiner	*Notropis bifrenatus*	Special Concern

Core Habitat LW252

Plants

Common Name	Scientific Name	Status
Water Marigold	*Megalodonta beckii*	Watch Listed

Invertebrates

Common Name	Scientific Name	Status
Eastern Pondmussel	*Ligumia nasuta*	Special Concern

Core Habitat LW292

Plants

Common Name	Scientific Name	Status
Alternate-Flowered Water-Milfoil	*Myriophyllum alterniflorum*	Endangered
Water Marigold	*Megalodonta beckii*	Watch Listed

Fishes

Common Name	Scientific Name	Status
Bridle Shiner	*Notropis bifrenatus*	Special Concern

Living Waters: Core Habitat Summaries

Boxford

Core Habitat LW111

This Core Habitat supports one of only two known populations of Bridle Shiner in the Ipswich Watershed. This fish Species of Special Concern is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes.

Core Habitat LW129

Fish Brook Pond supports a large population of Bridle Shiner, which represents one of only two known populations of this fish in the Ipswich Watershed. This Species of Special Concern is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes.

Core Habitat LW252

Chadwick Pond supports five of the state's twelve freshwater mussel species, including the rare Eastern Pondmussel. The population of this rare mussel is significant because it is uncommon to find this species in ponds of the area. Muskrat predation appears to be a real threat to the mussels in this pond, as hundreds of shells were found in muskrat middens. The pond has good water clarity, and mussels have been found anchored in the bottom sands and cobbles in open areas or amongst aquatic plants.

This Core Habitat also supports a population of Water Marigold, an uncommon plant most often found to the west in Berkshire County. Native freshwater plants like the Water Marigold are an important component of aquatic ecosystems, providing habitat and nutrition for fishes and invertebrates, and adding oxygen to the water through photosynthesis.

Core Habitat LW292

The state's only confirmed population of the Alternate-Flowered Water-Milfoil, a northern plant species, is found in Baldpate Pond. A population of Water Marigold, an uncommon plant most often found in Berkshire County, also has an eastern foothold in this pond. Native freshwater plants like these species are an important component of aquatic ecosystems, providing habitat and nutrition for fishes and invertebrates. For example, the well-vegetated waters here support a population of Bridle Shiner, a fish Species of Special Concern that is thought to be in decline in eastern Massachusetts as it was found at only 23% of its former sites in recent surveys. It feeds on small aquatic insects and other invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes.

Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the

Natural Heritage &
Endangered Species Fund

To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.